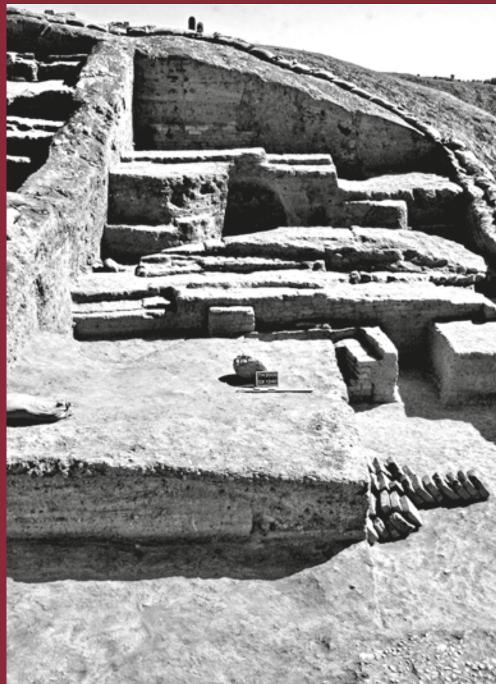

Zwischen Ausgrabung und Ausstellung

Beiträge zur Archäologie Vorderasiens

Festschrift für Lutz Martin

Herausgegeben von Nadja Cholidis,
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Lutz Martin, im Hintergrund die östliche Sphinx vom Tell Halaf, Berlin 2010
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To Sift or Not to Sift …

Research on the Effectiveness of Sifting

Marilyn Kelly-Buccellati / Los Angeles

1. Background

The excavations at Tell Mozan have yielded thousands of seal impressions that are small and unbaked and therefore fragile by nature.[1] The contexts of these seal impressions vary but all are difficult to find in a soil matrix that is the same color and texture as the seal impressions. Our local excavators have worked with us a number of years and are very attentive to even small artifacts of every type. They care about their work and over the years have developed trained eyes for sherds and small objects. Because of this we have been confident that little has been missed during the excavation process. But we wanted to check on this.

We decided to conduct an experiment whereby all the soil from a small locus was first processed by using our usual methods. These usual methods mean that in every locus the objects are recorded individually and boxed separately. The other items (ceramics, lithics and bones) are collected in their entirety and stored separately. These groups are given q-lot numbers with a designation indicating their content. The letter q in this case stands for "quantity", that is objects collected in quantity and triangulated within a relatively small matrix, i. e. a volume that is generally no more than one to two meters on the side, and twenty to twenty-five centimeters in height. The concept of q-lot has thus a double meaning. On the one hand it represents a volume, on the other the items found within it. Each q-lot is in turn associated with a feature, i. e., a culturally defined entity, generally an accumulation deposited on top of a floor or within a narrowly defined space, such as a pit: a q-lot as such is defined by non-cultural parameters (i. e., the measurements that define the volume), but is encased within cultural boundaries.

The excavator of a given feature collects the material in separate bags labeled with the q-lot numbers pertinent to that feature. Each bag is used for only one type of object, so ceramics in one bag, lithics in another, etc. The bags are intentionally small, as is the volume from which the items come, so that the quantities for each q-lot are limited. With the present experiment we decided to use a two step approach: first the ceramics, lithics and bones were collected as described above. In a second step we sifted the excavated dirt to see what had been missed. In addition to the information we received on what was missed, our sifting experiments gave us an insight into how long it takes to sift a given amount (with our mechanized system, see below, a relatively short period of time) and the manpower needed to do this.

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[1] It is a pleasure to dedicate this article to a colleague whose seminal work in Berlin has long inspired us. Fortunately we were able to share thoughts on the excavation process with him both at Tell Halaf and Mozan. It is in this spirit that I dedicate to him the results of a research undertaken during fieldwork in Mozan.

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2. Aims of the Research

Before the research began several aims were articulated. We wanted to:

- determine what types of archaeological materials (if any) were being missed entirely by the excavators and their teams at the moment of excavation.
- check what types and sizes of archaeological materials are consistently underrepresented in the q lots collected in the features by the excavators and their teams. This especially refers to sherds but may also refer to lithics and bone.
- check how many ceramic rims and bases are missed at the point of excavation and their approximate size.
- since at that point we were excavating strata dating to the Mittani period, we wanted to check how many painted sherds are missed at the point of excavation.
- check the approximate time and manpower requirements for an average q-lot to be sifted.

3. The Research Context

The Urkesh Global Record embodies the totality of the record of the excavation. Within it are recorded, on a daily basis in the field and during subsequent research, all the data as it is recorded and analyzed. In the case of the ceramics all the sherds are collected from the excavation units, both body sherds and shape sherds, and all are analyzed. It is because of our emphasis on the collection and analysis of the totality of the data that we are very interested in what we possibly could be missing.

The context of the research were two excavation units both near the stone revetment wall surrounding the temple terrace (Fig. 1).[2] J2 is located on the exterior of the wall and J3 is situated behind/inside the wall. J2 features contained mixed pottery dating to the Early Dynastic and to the Mittani periods. The excavations of J3 were just beginning and the research included four of the uppermost features (features 1,2,31,37) which had mixed ceramics dating from the Late Chalcolithic to the Mittani periods. We thought it was important to sieve the backdirt in this area at the beginning since previously there had been a number of cylinder seal impressions in adjacent areas. However the two areas were chosen for this experiment, not because of their context but for their relative ease of access.

4. How the Research was Conducted

Since the excavations were deep we had constructed a mechanical method of transporting the backdirt to the surface of the tell. This method was similar to an escalator but in this case the dirt was contained within a closed tube on small shelves until it spewed out, usually directly into a trailer for removal from the site (Fig. 2). For the sieving process the dirt dropped directly into a large sieve (Fig. 3).

[2] Kelly-Buccellati 2010; Buccellati / Kelly-Buccellati 2014.

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In J2 and J3 the local excavators and their teams proceeded with their standard routine of putting all the sherds, bones, and lithics in their respective plastic bags labeled with their q-lot numbers. For the sifting process we took advantage of the mechanical means we had developed so that all the soil from the defined q-lot was sifted. The system included two steps, as shown in Figs. 2 and 3. At the base of the mechanical lift, there was a 2 cms screen, and at the top a 1 cm screen. Material from both screens was combined in a single lot. At the sifting stage the sherds, bones and lithics (when present in the sifter) were collected and labeled indicating that they derived from the sifting of the soil. The sifted lots were given a different number than the non-sifted q's from the same defined space. The process of sifting took between 10–15 minutes depending on the volume of dirt. The units needed about two extra team members to accomplish this; the sifting at times slowed down the work in the unit.

At the point of washing the lithics and bones were first counted. None of the lithics were worked pieces (neither chipped stone nor ground stone) but clearly had come from the large stones near their respective q's. Few bones were found in the sifted dirt. The washed sherds from both sources were examined to determine if there were any immediately apparent patterns or joins and to determine the approximate size range of the sherds in each type of lot. In order to obtain uniform typological statistics the lots were processed using our standard analysis system.

In J2 the experiment was conducted over two days with 10 lots examined from sifted and un-sifted q-lots (Table 1). The 10 lots came from two excavated features, f166 and f174. The total number of sherds in these features was 1820, including 1695 body sherds,125 shape sherds and 57 painted sherds. In J3 the experiment was conducted also over 2 days with 12 lots examined coming from 4 excavated features, f1, f2, f31, f37. The total number of sherds examined was 1731 of these 1387 are body sherds while 144 shape sherds. The sherd count also included 92 painted sherds.[3] From the two areas the total number of sherds analyzed was 3551 including both body and shape sherds.

5. Research Results

We may now consider in detail the results with regard to the five aims which we had set ourselves.

a–b. Material missed or underrepresented

No items were discovered other than sherds, i. e. no worked lithics, no seal impressions, no complete or even almost complete bones[4], etc.

As for the sherds the total number found in the sifter was high in comparison to those found at the point of excavation in the majority of q's. However when the

[3] The current cumulative count for the sherds excavated in these two units is as follows: 33,813 in J2 and 13,384 in J3.

[4] The disadvantage of the mechanical process is that small fragile bones could be broken. Because of this we instructed the excavators to be especially attentive to small bones when the mechanical process was in use.

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average sherd weight in grams was computed proportionally to the average size of the sherd (assuming for this study a constant sherd density) then it is clear that sherds in the sifter are much smaller. For instance, two lots in J3 feature 37 (q56 and q57) had an average weight from the sifter of 28 grams (27.66 gr) and from the point of excavation of 108 grams (108.33 gr); this indicates a very broad range of difference in sizes.

c–d. Special diagnostic and painted sherds

No special diagnostic sherds were found in the sifter. In J2 there were 36 painted sherds and in J3 25 painted sherds from sifting. The painted sherds from the sifter were so small that nothing meaningful could be gained from the painted detail.

e. Time and manpower requirements

The main advantage of sifting is clearly that every sherd is discovered. But in this case, and we think in general for our excavations, the disadvantages include the time it takes to wash and analyze small body sherds. In one sifted q-lot (J3q47) there were 487 body sherds, the largest size of which was 6x4 cm and the smallest 2.5x2 cm. That the sherds in this lot were on the whole small sherds can be seen by the average sherd weight of 11.56 g. As shown in Table 1, this is the general pattern for all the q-lots in the study.

The answers to our research aims as formulated at the start of the research were important in terms of our excavation strategy. Clearly, an obvious advantage for a total collection system is that with the collection from the sifter, everything is certainly collected and subsequently analyzed. But the nature of the material collected through sifting is such that it does not alter significantly the primary goal of obtaining a total record. The main goal of this approach is to make possible statements of non-occurrence, which are more powerful theoretically than statements of occurrence, and have a greater heuristic value: the distributional array is complete so that statements of probability are more plausible.[5] But this goal is essentially achieved, in the case of the samples studied in our project, even without sifting, given the nature of the material found through sifting.

With regard to time expenditure, there are two factors to be considered: the sifting and the post-sifting analysis of the recovered material. The answer for our excavation strategy (which was behind the whole experiment in the first place) was that sifting would occur anyway since it is built into the mechanical lift operation; but that the subsequent analysis would be limited only to items that exhibited a particular typological significance – which indeed was hardly ever the case.

The question may nevertheless arise as to whether even such small sherds might contribute to the analysis of the ceramics from any one stratigraphic context. The connection between context and the embedded ceramics in that context is at the heart of the decision to process all sifted material or not. In the area of Syro-Mesopotamia the ceramic evidence is abundant. From our excavations in Urkesh/Mozan we recorded on average between 40,000 and 50,000 sherds a season, depending on

[5] Buccellati 2017: 119.

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multiple factors including, among others, the contexts excavated, the physical nature of these contexts, the length of the digging season. The decision then might still be applicable in very special contexts where even the small fragments retrieved through sifting might be useful.

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Figures

Fig. 1 Urkesh/Mozan excavation units J2 and J3. (© IIMAS)

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Fig. 2 Urkesh/Mozan: Backdirt being mechanically lifted into a trailer for removal. The sifter at the base has a 2 cms mesh. (© IIMAS)

Fig. 3 Urkesh/Mozan: Backdirt being sifted at the end of the mechanical lift. The sifter has a 1 cm mesh. (© IIMAS)

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Unit	Feature	Test sample	Volume in cubic meters	q number	Sifted	Weight in grams	Total number of sherds in lot	Number of body sherds	Number of shape sherds	Average sherd weight in grams (proportional to average size of sherd, assuming constant sherd density)	Percentage of shape sherds from all shape sherds in whole volume (both lots)	Number of painted sherds	Approx size of largest body sherd	Approx size of largest shape sherd	Approx size of smallest sherd	Other types of artifacts in lot	Percentage of sherds found in sifter	Percentage of weight of sherds from sifter to whole lot
J2	166	1	0.32	449	N	1325	76	71	5	17.43	71.43%	4	7x6.5 cm	11.3x5 cm	2x1.5 cm	none	63.5%	43.6%
				454	Y	1025	132	130	2	7.77	28.57%	4	5x6 cm	4x3.5 cm	2x1.5 cm	none		
J2	174	2	0.65	458	N	4500	226	202	24	19.91	50.00%	5	6.5x6.5 cm	7.5x5 cm	2.5x2.0 cm	none	59.4%	37.7%
				459	Y	2725	331	307	24	8.23	50.00%	5	6.3x4.5 cm	5.3x4.8 cm	2.5x2.3 cm	3 bone frags, 5 bone frags, 1 Ninevite V sherd		
J2	174	3	0.41	463	N	4725	255	230	25	18.53	80.65%	10	12x9cm	9.5x6.5 cm	1.8x1.7 cm	none	47.6%	36.6%
				464	Y	2725	232	226	6	11.75	19.35%	8	5x7 cm	4.5x3 cm	1.5x1.5 cm	none		
J2	174	4	0.28	482	N	3275	131	118	13	25.00	46.43%	0	9.5x6.5 cm	7.5x6.5 cm	3x1.5 cm	none	71.6%	54.0%
				483	Y	3850	331	316	15	11.63	53.57%	16	6.5x4.5 cm	4.5x4 cm	1x1 cm	18 lithic frags		
J2	174	5	0.41	485	N	1850	27	21	6	68.52	54.55%	2	17x14.5 cm	10x5.7 cm	3x2.5 cm	none	74.5%	34.5%
				486	Y	975	79	74	5	12.34	54.55%	3	4.5x3.5 cm	6x4.5 cm	1.5x2.2 cm	none		
J3	1	6	1.04	44	N	775	48	41	7	16.15	53.85%	1	7x3.5 cm	6.5x5.5 cm	2x1.8 cm	none	77.0%	67.0%
				45	Y	1575	161	155	6	9.78	46.15%	0	5.5x5 cm	4.5x3.5 cm	1.7x1.5 cm	3 lithic frags		
J3	2	7	0.88	46	N	5125	76	57	19	67.43	39.58%	8	11x10 cm	6.5x6 cm	3x2.5 cm	none	87.2%	61.8%
				47	Y	8275	516	487	29	16.04	60.42%	8	6x4.5 cm	4.5x4 cm	2.5x2 cm	12 lithic frags, 1 bone frag		
J3	2	8	1.08	49	N	1825	51	47	4	35.78	21.05%	1	12x7 cm	4.5x3 cm	3x2 cm	none	81.9%	68.8%
				50	Y	4025	230	215	15	17.50	78.95%	5	7x5 cm	8x7 cm	2.8x2.5 cm	3 lithic frags		
J3	37	9	2.12	52	N	850	20	14	6	42.50	22.22%	0	12x6.5	9x6.5	4x3.5 cm		92.2%	88.2%
				53	Y	6325	238	217	21	26.58	77.78%	3	8x6	8x7	3.5x2.5 cm	1 rope decorated		
J3	37	10	0.4	56	N	975	9	9	0	108.33	0.00%	0	13.5x10	?	4.5x4 cm		94.9%	82.7%
				57	Y	4675	169	146	23	27.66	100.00%	5	9.5x6	8.5x5.5	4.5x2 cm	1 Ninevite V sherd		
J3	37	11	0.2	58	N	1225	20	13	7	61.25	35.00%	0	8x6	15.5x10	3.5x1.5 cm	none	88.5%	70.8%
				59	Y	2975	154	141	13	19.32	65.00%	4	7.3x5	7x4.5	2.5x2.5 cm	none		
						J2 Totals	1820	1695	125			57						
						J3 Totals	1692	1542	150			35						
						Total	**3512**	**3237**	**275**			**92**						

Table 1 Quantitative details of sifting experiment in excavation units J2 and J3

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